

BASIS FOR THE AMENDMENT

Claims 1-20 are active in the present application. The claims have been amended for matters of form. The amendment to the claims for matters of form is not intended to further limit the claimed subject matter.

No new matter is added.

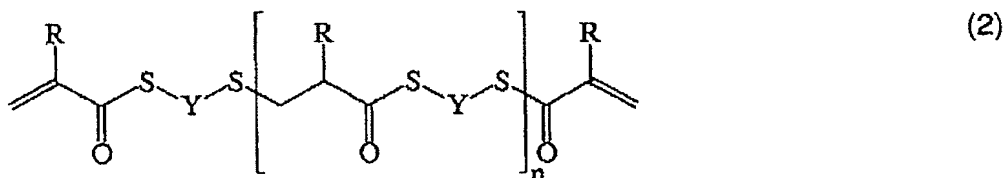
REQUEST FOR RECONSIDERATION

Applicants thank Examiner Pezzuto for the helpful and courteous discussion of June 28, 2005. During the discussion the Examiner indicated that she may be willing to prosecute the present application concurrently with Application Nos. 10/529,478 and 10/532,823. Applicants further thank the Examiner's Supervisor Mr. David Wu for considering docketing the above-noted co-pending applications to Examiner Pezzuto.

Applicants have disclosed a process for preparing plastics that are useful for ophthalmic lens applications. The process of the present claims includes polymerizing a mixture of compounds. The compounds which are polymerized are prepared from certain starting materials in a certain molar ratio.

The present specification explicitly contrasts the presently claimed invention with the disclosure of German application DE 4234251 which is a corresponding foreign application to Bader (U.S. 5,384,379) which was cited by the Office against the present claims. The present application compares the presently claimed process with that of Bader, this disclosure reproduced below for convenience:

DE 4234251 discloses sulphur-containing polymethacrylates which are obtained by free-radical copolymerization of a monomer mixture comprising compounds of the formula (1) and (2).



In these formulae, Y is an optionally branched, optionally cyclic alkyl radical having 2 to 12 carbon atoms or an aryl radical having 6 to 14 carbon atoms or an alkaryl radical having 7 to 20 carbon atoms, wherein the carbon chains may be interrupted by one or more ether or thioether groups. R represents hydrogen or methyl and n is an integer from 1 to 6.

In DE 4234251, the monomers of the formula (1) and (2) are generally in a molar ratio of 1:0.5 to 0.5:1. **The monomer mixture is prepared by reacting at least two moles of (meth)acryloyl chloride or (meth)acrylic anhydride with one mole of a dithiol, the methacryloyl chloride or methacrylic anhydride** in an inert organic solvent and the dithiol in an aqueous alkaline solution. Solvents mentioned as useful include methyl tert-butyl ether, toluene and xylene, the dielectric constant of which is respectively 2.6, 2.4 and 2.3-2.6 at 20°C.

The plastics described in DE 4234251 are colourless, rigid and somewhat brittle and have a high refractive index  $n_D$  in the range from 1.602 to 1.608. The Abbe number is between 35 and 38. Therefore, these plastics too have only limited usefulness for spectacle glasses. Again, this reference does not disclose any information with regard to the Vicat temperature of the plastics.

Against that background, it is an object of the present invention to provide a process for preparing a highly transparent plastic having a very high refractive index, preferably above 1.608, and a very high Abbe number, preferably above 36, that makes it possible to prepare optical lenses. More particularly, the plastic spectacle glasses preparable shall possess low dispersion and no coloured edges.

The monomers which are polymerized in Bader are derived “by reacting **at least two moles** of (meth)acryloyl chloride or (meth)acrylic anhydride with one mole of a dithiol” (page 3, lines 20-22). In contrast, the present claims require that the compounds that are polymerized are derived from monomers in a ratio of from 1.0 to less than 2.0. Applicants note that there is no overlap between the presently claimed molar range and the molar ranges exemplified in Bader.

The Office states that (i) the prior art and the claimed process ‘essentially employ identical process conditions’ and (ii) that “it is not clear where the unexpected results lie in Applicants’ process as compared to the prior art process”.

At the outset, Applicants note that the process conditions of the present claims are not identical to the process conditions in the Examples of Bader. Applicants submit that Bader does not disclose the synthesis of compounds I or II recited in present independent Claim 1 by reacting monomers in a ratio of from 1.0 to less than 2.0 mol. Applicants submit that the ratio of monomers in the mixture is critical to obtaining a certain product mixture. Applicants have provided comparative data in the present specification to show that the process of the present claims provides a different product than the process of Bader. Applicants draw the Office’s attention to Table 3 on page 30 of the specification (reproduced below for convenience):

Table 3: characterization of product mixtures

	$n_D^{20}$	Colour	MAA [mol%]	EDTDMA [mol%]	Mono- adducts [mol%]	Diadducts [mol%]	Tri- adducts [mol%]
VB1	1.5645	colourless		52.3	27.4	6.6	5.8
VB2	1.5600	colourless	4.5	58.5	23.3	6.3	2.4
VB3	1.5571	yellow	< 1	71.4	18.9	2.6	< 1
B1	1.5700	yellow	< 1	37.9	37.5	13.2	5.9
B2	1.5704	colourless		39.2	36.3	14.4	6.3
B3	1.5733	colourless	< 1	29.6	38.8	13.9	8.0
B4	1.5729	colourless	< 1	24.0	44.1	16.3	8.0

The difference in the reaction products obtained by the presently claimed process in comparison with the processes of Bader is evident in Table 3 above. The difference is reflected in the products present in the product mixture, for example, in the relative amounts of EDTDMA (1, 2-ethanedithiol dimethacrylate), monoadducts, diadducts and triadducts. It is readily evident from Table 3 that the inventive examples (i.e., B1-B4) have substantially different product mixtures in comparison to Comparative Examples VB1-VB3.

Table 1 of page 30 (reproduced below for convenience) provides the molar ratios of the ethane dithiol and methacrylic acid reacted to form the polymerizable monomer mixture. As is shown below each of Comparative Examples VB1 and VB3 use more than 2.0 moles of a compound of formula III of present Claim 1 (e.g., methacrylic acid) for each mole of compound of formula IV of present Claim 1 (e.g., ethane dithiol).

Table 1: substances used

	1, 2-Ethane-dithiol [mol]	MAA [mol]	NaOH [mol]	Solvent
VB1	1	2.100	2.300	Methyl tert-butyl ether
VB2	1	1.520	1.500	Methyl tert-butyl ether
VB3	1	2.100	2.300	Ethyl acetate
B1	1	1.520	1.760	Ethyl acetate
B2	1	1.520	1.760	Ethyl acetate
B3	1	1.450	1.692	Ethyl acetate
B4	1	1.450	1.692	Ethyl acetate

Applicants submit that the substantial difference in product mixtures obtained from the claimed process in comparison to the comparative process (i.e., Bader) may not have been foreseen but for the disclosure of the present application. The Office has put forth no reasonable technical argument why one of ordinary skill in the art would be able to foresee such a difference in the product mixture upon changing the relative ratio of the starting materials.

Furthermore, Applicants have shown that polymerization of the resulting product mixture provides a plastic material of significantly different characteristics in comparison to the plastic material obtained from polymerizing the product mixture of Bader. It is disclosed on page 31 of the present specification that the plastic material obtained from the product mixture made according to the process recited in present independent Claim 1 has a substantially higher index of refraction (i.e., 1.6169) in comparison to the index of refraction

for the comparative example of Bader (i.e., 1.6079). Moreover the plastic material of the invention has a higher ABBE number (e.g., 38.9 vs. 35).

Applicants submit that the data of the present specification demonstrate that a change in the molar ratio of the starting materials used to prepare compounds of formula I and II recited in present independent Claim 1, provide a polymerized plastic material that is different from the plastic material obtained by the process of Bader. The fact that this difference is substantial is demonstrated by Applicants' showing that the inventive process may provide a plastic of improved optical characteristics having, for example, improved index of refraction and ABBE number.

The Office further objected to the data of the specification by asserting that the data is a side-by-side comparison with the closest prior art. Applicants traverse the Office's characterization of the comparison between the inventive process and the Bader process. Applicants submit that the Comparative Examples disclosed in the present specification are the Examples of Bader (e.g., the closest prior art). In fact, the Comparative Examples of the present specification are explicitly described as "Comparative Examples VB1 to VB3 (as per DE 4234251)" (page 27, line 20). Thus Applicants have repeated example of Bader and have thereby provided a side-by-side comparison with the closest prior art.<sup>1</sup>

The Office further appears to assert that the comparative showing is not commensurate in scope with the claimed subject matter. Applicants traverse the Office's assertion. Applicants have shown that a process that is carried out in the manner of the present claims can provide a product mixture that is significantly different from a product mixture obtained in the manner of the prior art (e.g., Applicants have shown that the ratio of the starting materials is critical to obtaining a different product). Applicants have shown the criticality of the mole ratio limitation of the present claims. Applicants have therefore

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<sup>1</sup> As mentioned above, DE 4234251 is a corresponding foreign publication of Bader - U.S. 5,384,379.

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provided comparative evidence of the patentability of the presently claimed subject matter by providing a side-by-side comparison of the prior art with the claimed invention and have shown a nexus between the criticality of the claim limitation and the improved results.

The Office further objects to the comparative showing on the grounds that some variables are different. Applicants note that some variables must be different because the comparative showing is a side-by-side comparison of the claimed invention with the prior art. If some variables weren't different then Applicants would be comparing the invention with itself. Further, the Office has provided no reasonable technical basis for asserting that any of the other "variables" may effect the formation of the product mixture as demonstrated for the claimed invention.

Applicants therefore submit that the present claims are not obvious in view of Bader and that the comparative data provided in the present specification is sufficient to rebut the Office's allegation that the claimed invention is obvious in view of Bader.

Applicants respectfully request the withdrawal of the rejection and the passage of all now-pending claims to allowance.

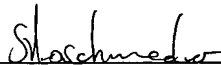
Respectfully submitted,

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